

CLAIMS

1. A water-based drilling fluid composition comprising water and a carboxymethyl cellulose (CMC), wherein the CMC is characterized by forming a gel at 25°C after high-shear dissolution in a 0.3 wt% aqueous sodium chloride solution, the final content of the CMC in the aqueous sodium chloride solution being 1 wt% for a CMC having a degree of polymerization (DP) of >4,000, 1.5 wt% for a CMC having a DP of 3,000-4,000, 2 wt% for a CMC having a DP of 1,500-<3,000, and 4 wt% for a CMC having a DP of <1,500, the gel being a fluid having a storage modulus (G') which exceeds the loss modulus (G'') over the entire frequency region of 0.01-10 Hz when measured on an oscillatory rheometer operating at a strain of 0.2.
2. The drilling fluid composition of claim 1, wherein the CMC has a Brookfield viscosity of more than 9,000 mPa.s after high-shear dissolution in a 0.3 wt% aqueous sodium chloride solution, the final content of the CMC in the aqueous sodium chloride solution being 1 wt% for a CMC having a degree of polymerization (DP) of >4,000, 1.5 wt% for a CMC having a DP of >3,000-4,000, 2 wt% for a CMC having a DP of 1,500-3,000, and 4 wt% for a CMC having a DP of <1,500.
3. The drilling fluid composition according to any one of the preceding claims further comprising a smectite type of clay.
4. The drilling fluid composition according to any one of the preceding claims wherein the smectite type of clay is selected from a group consisting of bentonite, a mixed metal layer hydroxide, attapulgite, sepiolite and mixtures thereof.